

What is claimed is:

1. A method for fabricating a semiconductor device comprising:

forming a well, a source region, and a drain region in a substrate;

forming a gate oxide film on the substrate;

depositing a polysilicon film on the gate oxide film;

forming a trench isolation in the substrate by a dry etching process;

forming an oxide film on the inside surface of the trench isolation;

providing a dielectric material to fill in the trench isolation and planarizing
the dielectric material to expose the top surface of the polysilicon film; and

forming a gate by dry etching the polysilicon film.
2. The method of claim 1, wherein forming a gate by dry etching the
polysilicon film includes a first etching process without a selective ratio to the
dielectric material and a second etching process with a selective ratio to the dielectric
material, so that the dielectric material in the trench isolation is not protruded from the
gate oxide film.
3. The method of claim 1, wherein in the trench isolation forming, the
dry etching process is performed by using a photoresist pattern formed on the
polysilicon film as a mask.

4. The method of claim 1, wherein the planarizing of the dielectric material is performed by a CMP process.

5. A semiconductor device comprising:

a substrate;

a well, a source region and a drain region formed in the substrate;

a gate oxide film formed on the substrate;

a gate formed on the gate oxide film; and

a trench isolation in which a dielectric material is filled.